

and eating adequately. The evening before a marathon, athletes should eat a large carbohydrate meal with a moderate glycemic index, such as spaghetti (For more information on the glycemic index, see Podell and Proctor, *The G-Index Diet*, 1993).

Fluid Replacement and Diet on Race Day

The morning of the marathon, athletes should awake and rise at least four hours before the event. It helps to be fully carbohydrate loaded, but athletes should also have relatively stable blood glucose levels. For example, athletes should beware of consuming simple sugars too close to start time, and beginning the race with a much elevated or suppressed blood sugar level, since this is known to hinder performance in the marathon (Costill, 1986, Montain, Hopper, Coggan, Coyle, 1991). In this regard, the body processes different foods at different characteristic rates, and every individual is unique. So it will be necessary to experiment and get the race day diet figured out in the months preceding the competition. Some athletes are able to eat a breakfast including foods with a moderate glycemic index such as pasta about four hours before the race. Others can eat a breakfast including foods with a higher glycemic index, such as pancakes with maple syrup and peaches, two to three hours before the event. And still others can have toast one-and-a-half to two hours before a competition. Milk or other foods with lactose should generally be avoided.

Some marathoners will take tea or coffee an hour or two prior to a race. The caffeine in tea, coffee, and some soft drinks can facilitate greater mobilization of fatty acids (Newsholme and Leech, 1983). There is now in place a positive urine-testing threshold for caffeine of 12 mcg/ml. Please see the USATF rulebook, doping rule 67. However, a normal cup of tea, coffee or a can of Coca-Cola® with the fizz out of it will not trip the test, nor does it constitute drug abuse.

If an elite athlete has prepared well, often it is best to simply go with water during the marathon. However, it is extremely important to start drinking water in the early stages of the competition. Generally, the more water an athlete can ingest earlier in the race the better, since it is not possible to compensate for the amount of fluid that will be lost during the race. If necessary, lose a few seconds at the water stations early on, in order to get down as much fluid as possible, because it will pay the time back double in the latter stages of the race. Athletes should also practice how to grab a cup or bottle and drink on the run, because it is harder than it looks. Alternately, some bottles are now available which have a valve on the top or bottom to permit rapid delivery of fluid.

However, realize that the needs of recreational runners who will be on the course for three or more hours are different than those of the elite runners. From a physiological standpoint, there is a big difference between running for a little more than two hours at 75% VO_2 maximum, versus four hours at 50% VO_2 maximum. It may help to prepare a replacement drink including electrolytes, particularly when competing in heat and humidity. Nevertheless, it is generally a big mistake for athletes to take fluid replacement drinks that are not under their control, including many of those commercially available. Most commercial

products are far too concentrated and need to be substantially diluted to be ingested and properly absorbed. Otherwise, athletes have a good chance of throwing up the drink and further dehydrating themselves.

Some athletes might even want to take energy supplements during the marathon. Many runners have had success with a weak mixture of tea with honey. The closest thing to the hepatic and muscle glycogen that athletes will exhaust during the course of a marathon is glucose, a simple monosaccharide sugar. Glucose tablets are commercially available, and are normally used to rapidly stabilize low blood sugar levels in diabetics. Since the glycogen stores of runners will be nearly exhausted, and blood sugar levels can be significantly depressed, they essentially have the same need in the latter stages of a marathon, and immediately afterwards. However, recognize that different forms of sugar are absorbed at different rates. So the particular form of sugar most suitable for use would depend on the runner's condition, and also the remaining duration of the event. Athletes will also consume protein during the marathon. A large number of suitable commercial products having different formulations are available. And so, after experimenting in training sessions and perfecting the "formula" to be used, those runners who will be out on the course for three or more hours might consider taking an energy supplement (Coyle, 1992).

Aerodynamic Drag

Again, the marathon is a race of efficiency, thus the effects of aerodynamic drag and drafting can be substantial. As previously discussed in Chapter 14, closely following an individual or pack of runners in calm conditions can provide an energy savings corresponding to approximately one second/400 meters—that is, about 105 seconds or 1:45 in the marathon. And whenever headwinds are present, the energy savings can increase markedly, thus be doubled or tripled. Further, drafting can also reduce the rate of evaporation and dehydration. If and when an athlete takes the lead at 18 miles, leaving behind a pack of trailing runners, then they need to be at least 32 seconds fitter than the rest of the field to hold off a possible late charge from someone drafting in the trailing group. Accordingly, it is sometimes wise to be patient in the marathon.

Warm Up and Race Conduct

Because fatty-acid metabolism has such a relatively slow rate of mobilization and is so significant to the marathon, athletes should perform 20 minutes of easy walking or jogging at least an hour prior to the race. After the start, they should run as evenly and easily as possible through the first five miles. If they set too fast an early pace, they will force their metabolisms into using a higher percentage of carbohydrates for fuel and deplete that source far earlier than if they had instead gone out "as fast as necessary but slow as possible."

The marathon is a mirror that can reflect and magnify an individual's physical or mental imperfections tenfold. Once the race begins, nothing needs to be said to athletes about their mental state or specific race tactics. Shorter revealed his understanding when he watched Kenyan Douglas Wakiihuri win the 1987 World



PHOTO 16.2—Frank Shorter (left) and Kenny Moore (right) after the marathon, 1972 Olympic Games. Photo from AP/ Wide World Photos.

Championships marathon and used the word “unconscious.” He stated that in a marathon, “you don’t want to be thinking about anything in particular.” The Japanese Coach Kiyoshi Nakamura, who had trained Wakiihuri, would have used the word *mushin*, which translates roughly as “no mind.” Shorter’s former Olympic teammate Kenny Moore also knew the “right stuff” when he saw it—and wrote a gracious article on Wakiihuri and Nakamura entitled “A Man of Two Worlds,” in *Sports Illustrated* (Moore, 1987).

There is a story about the legendary Japanese *kensei*, or “sword saint,” Miyamoto Musashi. It is said that he was once approached by a student who desired to learn the art of swordsmanship. Musashi took the student on, but after months of merely doing boring housework the student asked to be “trained.” And so Musashi demonstrated the proper posture and technique, and then instructed him to practice swordsmanship while walking around the house. After several months, the student became bored, and so Musashi told him to continue to practice while walking around the house in the other direction. When the student finally tired of this he again approached his master. But this time, Musashi surprised him by feigning an attack. The student passed the test and Musashi exclaimed: “Great, you can concentrate—you’re already a master!” In many ways, training and successfully competing in the marathon is a lot like this story.

In conclusion, the marathon is an event that humbles and exalts, agonizes and exhilarates, injures and strengthens body, mind and spirit. Sometimes this 26.2-mile metaphor for life transcends the individual.

To believe this story you must believe that the human race can be one joyous family, working together, laughing together, achieving the impossible. I believe it because I saw it happen. Last Sunday, in one of the most trouble-stricken cities in the world, 11,532 men and women from 40 countries in the world, assisted by over a million black, white, and yellow people, Protestants and Catholics, Jews and Muslims, Buddhists and Confusians, laughed, cheered, and suffered during the greatest folk festival the world has seen.

—Chris Brasher, in celebration of the 1979 New York Marathon

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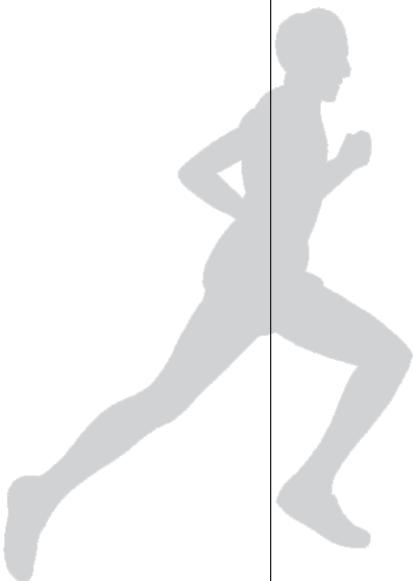
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APPENDICES

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APPENDIX A

High School Training Schedule for 800 Meters

Base Period

Last 21 Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4 Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2 Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4 Effort, Steady State
Sunday	Easy Effort, Long Run, 50-80 minutes
Monday	Passive Recovery
Tuesday	3/4 Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2 Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4 Effort, Steady State
Sunday	Easy Effort, Long Run, 50-80 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	1/2 Effort, Fartlek + Date Pace
Wednesday	Active Recovery
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Time Trial or Race
Sunday	Easy Effort, Long Run, 50-80 minutes

Hill Period

21-Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4 Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2 Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4 Effort, Hill Workout
Sunday	Easy Effort, Long Run, 50-80 minutes
Monday	Passive Recovery
Tuesday	3/4 Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2 Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4 Effort, Hill Workout
Sunday	Easy Effort, Long Run, 50-80 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial or Race 800m, and 400m
Wednesday	Active Recovery + 4 x 100m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 1,500m
Sunday	Easy Effort, Long Run, 50-80 minutes

Sharpening Period**First Meso-Cycle**

Monday	Passive Recovery
Tuesday	3/4 Effort, 3(4 x 300m) at 800m Goal Pace
Wednesday	Active Recovery
Thursday	1/2 Effort, Fartlek + 4 x 100m at Finishing Speed
Friday	Active Recovery
Saturday	3/4 Effort, 2(4 x 400m) at 1,500m Goal Pace
Sunday	Easy Effort, Long Run, 40-60 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial or Race 400m, and 200m
Wednesday	Active Recovery + 4 x 100m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 800m
Sunday	Easy Effort, Long Run, 40-60 minutes

Second Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4 Effort, 4 x 400m at 800m Goal Pace
Wednesday	Active Recovery
Thursday	1/2 Effort, Fartlek + 4 x 100m at Finishing Speed
Friday	Active Recovery
Saturday	3/4 Effort, 3 x 500m at 800m Goal Pace, or Race 2 x 400m
Sunday	Easy Effort, Long Run, 40-60 minutes
Monday	Passive Recovery
Tuesday	1/2 Effort, Fartlek + 4 x 60m Starts
Wednesday	Active Recovery
Thursday	Time Trial(s) 600m, full recovery, then 300m

Worthwhile Break**9-10 Day Ascent to Plateau of Peak Performance**

Friday	Active Recovery
Saturday	1/2 Effort, Fartlek + 3 x 60m Starts
Sunday	Easy Recovery
Monday	Day Before Race Routine
Tuesday	CONFERENCE PRELIM, Race 400m
Wednesday	Active Recovery
Thursday	CONFERENCE FINAL, Race 2 x 400m
Friday	Active Recovery
Saturday	Easy Effort, Long Run, 40-60 minutes
Sunday	Passive Recovery

14-to-21-Day Plateau of Peak Performance

Monday	Time Trial 300m slow-fast, full recovery, then 3 x 150m with Accelerations and full walk recovery
Tuesday	Active Recovery
Wednesday	Day Before Race Routine
Thursday	REGION PRELIM, Race 800m
Friday	Active Recovery
Saturday	REGION FINAL, Race 800m
Sunday	Easy Effort, Long Run, 40-60 minutes
Monday	Passive Recovery
Tuesday	Time Trial, 300m slow-fast, full recovery, then 3 x 150m with Accelerations and full walk recovery
Wednesday	Active Recovery
Thursday	Day Before Race Routine
Friday	STATE MEET PRELIM, Race 800m
Saturday	STATE MEET FINAL, Race 800m

APPENDIX B

High School Training Schedule for 1,500 Meters

Base Period

Last 21 Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 60-90 minutes

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 60-90 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + Date Pace
Wednesday	Active Recovery
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Time Trial or Race
Sunday	Easy Effort, Long Run, 60-90 minutes

Hill Period

21 Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 60-90 minutes

Monday	Passive Recovery
Tuesday	3/4-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 60-90 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial or Race 800m and 400m
Wednesday	Active Recovery + 5 x 150m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 3,000m
Sunday	Easy Effort, Long Run, 60-90 minutes

Sharpening Period**First Meso-Cycle**

Monday	Passive Recovery
Tuesday	3/4-Effort, 3(4 x 300m) at 1,500m Goal Pace
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + 4 x 150m at Finishing Speed
Friday	Active Recovery
Saturday	3/4-Effort, 6 x 800m at 3,000m Goal Pace
Sunday	Easy Effort, Long Run, 60-80 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial or Race 800m and 400m
Wednesday	Active Recovery + 4 x 150m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 1,500m
Sunday	Easy Effort, Long Run, 60-80 minutes

Second Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, 2(4 x 400m) at 1,500m Goal Pace
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + 4 x 100m at Finishing Speed
Friday	Active Recovery
Saturday	Time Trial or Race 2 x 800m
Sunday	Easy Effort, Long Run, 60-80 minutes
Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + 4 x 100m at Finishing Speed
Wednesday	Active Recovery
Thursday	3/4-Effort, 4 x 1,000m at 3,000m Goal Pace

Worthwhile Break**9-to-10-Day Ascent to Plateau of Peak Performance**

Friday	Active Recovery
Saturday	1/2-Effort, Fartlek + 3 x 100m at Finishing Speed
Sunday	Easy Effort, Long Run, 40-60 minutes
Monday	Day Before Race Routine
Tuesday	CONFERENCE FINAL, Race 3,000m
Wednesday	Easy Effort, Long Run, 60-80 minutes
Thursday	Passive Recovery
Friday	Day Before Race Routine
Saturday	Time Trial, 1,000m, then 300m
Sunday	Active Recovery

14-21 Day Plateau of Peak Performance

Monday	1/4 Effort, Fartlek + 3 x 150m at Finishing Speed
Tuesday	Easy Recovery
Wednesday	Day Before Race Routine
Thursday	REGION FINAL, Race 3,000m
Friday	Active Recovery
Saturday	REGION FINAL, Race 1,500m
Sunday	Easy Effort, Long Run, 60-80 minutes
Monday	Passive Recovery
Tuesday	Time Trial, 800m of 50-60 drill, then 300m
Wednesday	Active Recovery + 3 x 150m with Accelerations
Thursday	Day Before Race Routine
Friday	STATE MEET FINAL, Race 3,000m
Saturday	STATE MEET FINAL, Race 1,500m

APPENDIX C

High School Training Schedule for 3,000 Meters

Base Period

Last 21 Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 70-100 minutes

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 70-100 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + Date Pace
Wednesday	Active Recovery
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Time Trial or Race
Sunday	Easy Effort, Long Run, 70-100 minutes

Hill Period

21 Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 70-100 minutes

Monday	Passive Recovery
Tuesday	3/4-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 70-100 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial or Race 800m, 400m
Wednesday	Active Recovery + 4 x 200m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 1,500m
Sunday	Easy Effort, Long Run, 70-100 minutes

Sharpening Period**First Meso-Cycle**

Monday	Passive Recovery
Tuesday	3/4-Effort, 3(4 x 300m) at 1,500m Goal Pace
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + 4 x 200m at Finishing Speed
Friday	Active Recovery
Saturday	3/4-Effort, 6 x 800m at 3,000m Goal Pace
Sunday	Easy Effort, Long Run, 60-80 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial or Race 800m, 400m
Wednesday	Active Recovery + 4 x 150m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 3,000m
Sunday	Easy Effort, Long Run, 60-80 minutes

Second Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, 2(4 x 400m) at 1,500m Goal Pace
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + 4 x 150m at Finishing Speed
Friday	Active Recovery
Saturday	Time Trial or Race 2 x 800m
Sunday	Easy Effort, Long Run, 60-80 minutes
Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + 4 x 150m at Finishing Speed
Wednesday	Active Recovery
Thursday	3/4-Effort, 4 x 1,000m at 3,000m Goal Pace

Worthwhile Break**9-10 Day Ascent to Plateau of Peak Performance**

Friday	Easy Effort, Long Run, 60-80 minutes
Saturday	Active Recovery + 3 x 150 at Finishing Speed
Sunday	Easy Recovery
Monday	Day Before Race Routine
Tuesday	CONFERENCE FINAL, Race 3,000m
Wednesday	Easy Effort, Long Run, 60-80 minutes
Thursday	Passive Recovery
Friday	Day Before Race Routine
Saturday	Time Trial, 1,000m, then 300m
Sunday	Active Recovery

14-21 Day Plateau of Peak Performance

Monday	1/4 Effort, Fartlek + 3 x 150m at Finishing Speed
Tuesday	Easy Recovery
Wednesday	Day Before Race Routine
Thursday	REGION FINAL, Race 3,000m
Friday	Active Recovery
Saturday	REGION FINAL, Race 1,500m
Sunday	Easy Effort, Long Run, 60-80 minutes
Monday	Passive Recovery
Tuesday	Time Trial, 800m of 50-60 drill, then 300m
Wednesday	Active Recovery + 3 x 150m with Accelerations
Thursday	Day Before Race Routine
Friday	STATE MEET FINAL, Race 3,000m
Saturday	STATE MEET FINAL, Race 1,500m

APPENDIX D

High School Cross-Country Training Schedule For 5,000 Meters

Base Period

Last 21-Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 70-100 minutes

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 70-100 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + Date Pace
Wednesday	Active Recovery
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 5,000m
Sunday	Easy Effort, Long Run, 70-100 minutes

Hill Period

21-Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 70-100 minutes

Monday	Passive Recovery
Tuesday	3/4-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 70-100 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial 1,600m, then 300m
Wednesday	Active Recovery + 5 x 200m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 5,000m
Sunday	Easy Effort, Long Run, 70-100 minutes

Sharpening Period**First Meso-cycle**

Monday	Passive Recovery
Tuesday	1/2-Effort, 3 (4 x 300m) at 1500m Goal Pace
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + 4 x 200m at Finishing Speed
Friday	Active Recovery
Saturday	3/4-Effort, 6 x 800m at 3,000m Goal Pace
Sunday	Easy Effort, Long Run, 60-90 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial 1,200m, then 300m
Wednesday	Active Recovery + 4 x 200m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 5,000m
Sunday	Easy Effort, Long Run, 60-90 minutes

Second Meso-Cycle

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + 4 x 200m at Finishing Speed
Wednesday	Active Recovery
Thursday	3/4-Effort, 2(4 x 400m) at 1,500m Goal Pace
Friday	Active Recovery
Saturday	1/2-Effort, Fartlek + 4 x 200m at Finishing Speed
Sunday	Easy Effort, Long Run, 60-90 minutes
Monday	Passive Recovery
Tuesday	3/4-Effort, 4 x 1,200m at 5,000m Goal Pace

Worthwhile Break**9-to-10-Day Ascent to Plateau of Peak Performance**

Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + 3 x 200m at Finishing Speed
Friday	Easy Recovery
Saturday	Time Trial 1,600m
Sunday	Active Recovery + 4 x 150m with Accelerations
Monday	Easy Recovery
Tuesday	Day Before Race Routine
Wednesday	CONFERENCE FINAL, Race 5,000m
Thursday	Easy Effort, Long Run, 60-80 minutes
Friday	Passive Recovery

14-to-21-Day Plateau of Peak Performance

Saturday	Day Before Race Routine
Sunday	Time Trial 1,200m, then 300m
Monday	Active Recovery + 3 x 150m at Finishing Speed
Tuesday	Easy Recovery
Wednesday	Day Before Race Routine
Thursday	REGION FINAL, Race 5,000m
Friday	Easy Effort, Long Run, 60-80 minutes
Saturday	Passive Recovery
Sunday	Active Recovery + 6 x 200m at 1,500m Goal Pace
Monday	Day Before Race Routine
Tuesday	Time Trial, 1,000m, then 300m
Wednesday	Active Recovery + 3 x 150m with Accelerations
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	STATE MEET FINAL, Race 5,000m

APPENDIX E

Senior Men’s Training Schedule for 10,000 Meters

Base Period

Last 21-Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 80-110 minutes
Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 80-110 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + Date Pace
Wednesday	Active Recovery
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 5k or 8k on the Road
Sunday	Easy Effort, Long Run, 80-100 minutes

Hill Period

21-Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	1/2-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 80-110 minutes
Monday	Passive Recovery
Tuesday	3/4-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 80-110 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial 1,600m, then 300m
Wednesday	Active Recovery + 5 x 200m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 3,000m
Sunday	Easy Effort, Long Run, 80-110 minutes

Sharpening Period**First Meso-Cycle**

Monday	Passive Recovery
Tuesday	3/4-Effort, 2(5 x 400m) at 1,500m Goal Pace
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + 4 x 200m at Finishing Speed
Friday	Active Recovery
Saturday	3/4-Effort, 8 x 800m at 5,000m Goal Pace
Sunday	Easy Effort, Long Run, 80-100 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial 1,200m, then 300m
Wednesday	Active Recovery + 4 x 200m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 5,000m
Sunday	Easy Effort, Long Run, 80-100 minutes

Second Meso-Cycle

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + 3 x 200m at Finishing Speed
Wednesday	Active Recovery
Thursday	3/4-Effort, 4-5 x 1,600m at 10,000m Goal Pace
Friday	Active Recovery
Saturday	1/2-Effort, Fartlek + 3 x 200m at 1,500m Goal Pace

Worthwhile Break

9-to-10-Day Ascent to Plateau of Peak Performance

Sunday	Easy Effort, Long Run, 80-90 minutes
Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + 3 x 200m at Finishing Speed
Wednesday	Active Recovery
Thursday	2/3-Effort, 5 x 1,000m at 5,000m Goal Pace
Friday	Easy Effort, Long Run, 80-100 minutes
Saturday	Passive Recovery
Sunday	Time Trial, 2,000m 30-40 drill, then 300m
Monday	Active Recovery + 4 x 150m at Finishing Speed

14-to-21-Day Plateau of Peak Performance

Tuesday	Easy Recovery
Wednesday	Day Before Race Routine
Thursday	CHAMPIONSHIP PRELIM, Race 10,000m
Friday	Active Recovery
Saturday	Active Recovery
Sunday	CHAMPIONSHIP FINAL, Race 10,000m

APPENDIX F

Senior Men’s Training Schedule For The Marathon

Base Period

Last 21 Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 100-120 minutes

Monday	Passive Recovery
Tuesday	3/4-Effort, Anaerobic Threshold Steady State
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Steady State
Sunday	Easy Effort, Long Run, 110-130 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + Date Pace
Wednesday	Active Recovery
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Time Trial or Race 15K on the Road
Sunday	Easy Effort, Long Run, 100-120 minutes

Hill Period

21 Day Training Meso-Cycle

Monday	Passive Recovery
Tuesday	1/2-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 100-120 minutes

Monday	Passive Recovery
Tuesday	3/4-Effort, Hill Circuit
Wednesday	Active Recovery
Thursday	1/2-Effort, Fartlek + Date Pace
Friday	Active Recovery
Saturday	3/4-Effort, Hill Workout
Sunday	Easy Effort, Long Run, 100-120 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial 1,600m, 400m
Wednesday	Active Recovery + 5 x 200m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 5,000m
Sunday	Easy Effort, Long Run, 80-110 minutes

Sharpening Period**First Meso-Cycle**

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + 8 x 200m at 3,000m Goal Pace
Wednesday	Active Recovery
Thursday	3/4-Effort, 2(5 x 400m) at 1,500m Goal Pace
Friday	Active Recovery
Saturday	1/2-Effort, Fartlek + 4 x 200m at Finishing Speed
Sunday	Easy Effort, Long Run, 90-110 minutes

Worthwhile Break

Monday	Passive Recovery
Tuesday	Time Trial 2,400m 30-40 drill, then 400m
Wednesday	Active Recovery + 4 x 200m at Finishing Speed
Thursday	Easy Recovery
Friday	Day Before Race Routine
Saturday	Race 10,000m
Sunday	Easy Effort, Long Run, 80-100 minutes

Second Meso-Cycle

Monday	Passive Recovery
Tuesday	1/2-Effort, Fartlek + 8 x 200m at 1,500m Goal Pace
Wednesday	Active Recovery
Thursday	3/4-Effort, 6-8 x 800m at 5,000m Goal Pace
Friday	Active Recovery
Saturday	1/2-Effort, Fartlek + 4 x 200m at Finishing Speed
Sunday	Active Recovery
Monday	3/4-Effort, 4-5 x 1,600m at 10,000m Goal Pace
Tuesday	Easy Effort, Long Run, 80-90 minutes

Worthwhile Break

9-to-10-Day Ascent to Plateau of Peak Performance

Wednesday	Passive Recovery
Thursday	1/2-Effort, Fartlek + 3 x 200m at Finishing Speed
Friday	Active Recovery
Saturday	2/3-Effort, 5 x 1,000m at 5,000m Goal Pace
Sunday	Active Recovery
Monday	Easy Effort, Long Run, 80-100 minutes
Tuesday	Passive Recovery
Wednesday	Time Trial, 2,400m 30-40 drill, then 400m
Thursday	Active Recovery + 6-8 x 200m at 1,500m Goal Pace

14-to-21-Day Plateau of Peak Performance

Friday	Easy Recovery
Saturday	Day Before Race Routine
Sunday	MARATHON FINAL

GLOSSARY

Abduct: To point or move a limb or other portion of the body away from the midline.

Acquisition: Adaption resulting in improvement of an individual's potential performance level. A stage of training in which athletes assume generally increasing and changing training loads to elevate their performance potential. This generally corresponds to the preparation phase, and activity conducted during the base, hill and sharpening periods.

Acquisitive: Training efforts with the goal of effecting acquisition.

Active Recovery: A training session conducted at less than or equal to a 1/4-effort, normally performed the day after a 1/2- or 3/4-effort. On a day of active recovery, mature athletes generally undertake an easy morning run of less than 25 minutes, and a longer afternoon or evening run. Easy swimming can be substituted for the morning run. In the course of the afternoon session, athletes should include a few easy accelerations, preferably on undulating natural terrain.

Adduct: To point or move a limb or other portion of the body towards the midline.

Actual Performance: The athlete's demonstrable athletic level at any given point in time. It is approximately equal to the athlete's performance potential at the end of a worthwhile break, and also during the peak period.

Aerobic Ability: The ability of an athlete's metabolism to extract and use oxygen when producing energy for useful work. It is commonly measured in ml/kg/min, and hence referred to as maximum oxygen uptake or VO_2 maximum.

Aerodynamic Drag: The sum of friction-induced drag and pressure-induced drag. Pressure-induced drag contributes most substantially to the aerodynamic drag experienced when running. See *Friction Induced Drag* and *Pressure Induced Drag*.

Anabolism: Constructive body-building metabolism.

Anaerobic Threshold: The point at which an athlete begins to more substantially use the ATP-Lactic energy system during exercise. In particular, the deviation point in the relatively linear heart-rate response when an athlete takes on a gradually increasing aerobic workload. The anaerobic threshold can also be determined by blood lactate measurement. In this case, it is the point where blood lactate deviates from the baseline level by 1mM as an individual performs a gradually increasing aerobic workload. It is commonly associated with a value of approximately 4mM.

Anaerobic Threshold Steady State (ATSS): A 3/4-effort distance run normally conducted during the base or hill periods. It is generally 70-80% of the distance of an even paced steady state (SS) run. Throughout an ATSS

training session athletes run at slightly below their anaerobic threshold, then increase their effort while briefly crossing the threshold, then recover by running as close as possible to steady state pace. The ATSS workout can be conducted by simply undertaking an evenly paced steady state run over hilly terrain.

Ascent: The period of 7-14 days, and normally 9-10 days preceding the plateau of peak performance within the peak period. It consists of a worthwhile break in which training loads are normally reduced below 60% of maximum working capacity. The method of easing training loads at this time is sometimes also referred to as tapering.

Athletic Level: The highest standard of performance an athlete is expected to attain within the peak period of the current athletic season. Within a given athletic season, it is the athlete's estimated performance potential at a particular point in time, or demonstrated athletic performance.

ATP-Aerobic: The aerobic energy system that predominates in demanding efforts lasting over 3:00 minutes.

ATP-Lactic: The anaerobic energy system associated with substantial lactic acid production and use that predominates in exhausting efforts lasting between 45 seconds and 3:00 minutes. This energy system is used substantially in the 800-meter event.

ATP-PC: The Adenosine Triphosphate-Phosphocreatine anaerobic energy system that predominates in explosive efforts lasting up through 45 seconds. Sprinters rely substantially on this energy system.

Balance: An appropriate ratio of development between over-distance and under-distance events that enables optimal performance in the main race event. The presence of numerous preliminary heats in an anticipated competition can influence decisions made with respect to proper balance.

Bi-Annual: The conduct of two athletic seasons in a calendar year.

Biennial: A two-year developmental and peaking scenario.

Callusing: Training loads which are intended to condition an athlete to a specific physical or mental stressor.

Catabolism: Body-wasting metabolism. Transformation in which tissue is changed into energy and waste products of a simpler chemical composition.

Competitive Phase: A stage of athletic development characterized by performance in the peak period.

Concentric: A muscular contraction characterized by shortening.

Consolidation: Realization of performance potential by actual performance, and in particular, at the end of a meso-cycle during a worthwhile break or the peak period.

Date Pace: High quality work conducted during the base and hill periods to enable a gradual progression of physiological and biomechanical function with minimal risk of injury, and establish a sound foundation to support later work at goal pace during the sharpening period. Date pace is normally reduced from goal pace by 1 second per 400 meters for each meso-cycle preceding the start of the sharpening period. Date pace work can also be used to maintain or improve an athlete's running economy, and thus facilitates the conduct of quality base and hill work. Date pace work is normally performed once a week.

Day Before Race Routine (DBR): A training session required to place an athlete's cardiovascular system into a high state of readiness when three or more days separate a time trial or race from the primary competition, as is normally the case in the absence of preliminary heats. This workout normally includes a warm-up, several easy short accelerations with a full recovery, and then running a hollow 400 meters—that is, accelerating the first 100 meters, floating the next 200 meters, and then accelerating the last 100 meters, to solicit a pulse response slightly exceeding the athlete's heart rate deflection point and anaerobic threshold.

DBR: See *Day Before Race Routine*.

Decline: The stage of training associated with the transition phase, post-season recovery and complete absence of training loads. Because of the phenomenon of delayed transformation, this stage facilitates acquisition of the performance potential created during the preceding athletic season.

Deflection Point: The point at which the heart rate response deviates from a linear progression as an individual crosses the anaerobic threshold.

Delayed Transformation: The late arrival of improved performance potential observed in the early portion of a macro-cycle due to work undertaken in the previous athletic season. A period of post-season recovery following an athletic season can facilitate acquisition via delayed transformation.

Dorsal: The top side of the foot.

Dorsiflexion: Upward movement of the foot or toes about a joint.

Easy Recovery: A training session often conducted at less than or equal to a 1/4-effort, the day after an active recovery session and two days prior to a competition. It generally consists of a single easy run lasting less than 40 minutes, and includes a thorough stretching and flexibility session. Easy swimming can sometimes be substituted for the running session.

Eccentric: A muscular contraction characterized by lengthening.

Economy: See *Running Economy*.

Efficiency: Running technique associated with low oxygen consumption relative to an athlete's body weight and speed. See *Running Economy*.

Epiphysial Growth Plate: The region of long bones associated with growth.

Equilibrium: In the context of a steady-state run, a condition in which an adequate supply of oxygen meets the training-load demand such that an athlete functions aerobically.

Equilibrium (The Principle of): A training principle that suggests optimal acquisition of fitness and athletic performance is achieved by maintaining a balance between different aspects of fitness, such as endurance, strength and speed.

Equivalent Performances: The projected level of athletic performance in an over-distance or under-distance event based on an actual or projected performance in the main race event, and vice-versa.

Extended Peak Period: A peak period that begins with a short peak period, but which extends the plateau of peak performance beyond the normal 2-3 weeks by including stabilizing training efforts.

External Training Load: A training load or workout defined using a tangible medium of expression.

Fartlek: A Scandinavian word meaning "speed-play," and training technique invented by Coach Gosta Holmer. In the context of this treatment, Fartlek normally comprises a 1/2-effort training session conducted during the base or hill period. However, it is sometimes also conducted during the sharpening and peak period in order to help maintain the fitness acquired through preceding base and strength work. The early portion of a Fartlek workout is normally run on hilly or rolling terrain on a natural surface. Often date pace work can then be conducted and integrated with a Fartlek workout.

Finishing Speed (FS): Speed work generally similar to that conducted by sprinters intended to improve an athlete's closing speed over the last 400 meters of a race. This work normally consists of a brief series of controlled accelerations and reps, having a distance not greater than 400 meters. Between each rep, the athlete is permitted a full recovery period. Finishing speed work should always be progressed to enable optimal performance during the peak period. The desired maximum closing speed over 100 or 200 meters constitutes goal-finishing speed. Finishing speed work can be progressed so as to advance the quality and speed by .5 seconds/200 meters in each meso-cycle leading to the plateau of peak performance.

Friction-Induced drag: The work done when air (or a fluid) slows and produces heat by encountering a surface.

Goal Pace: The desired and selected pace for performance in the main race event during the peak period.

Habituation: The tendency of the human body to grow accustomed to a particular stimulus or training-load. The body will then cease to respond with as much supercompensation and acquisition, and thus not continue to realize steady improvement in performance potential.

Hard Day-Easy Day Rule: A training method in which a hard day of training is alternated with an easy day to facilitate recovery and supercompensation. This method is not always viable depending on the magnitude and type of training loads being assumed.

Internal Training Load: The level of effort imposed by an external training load on an athlete, as might be measured by subjective feedback, heart rate, oxygen uptake, respiratory quotient, or blood lactate.

Interval Workout: A series of running efforts conducted equal to or slower than goal pace in the main race event that utilize a continuous jog or running recovery period lasting less than 2:30 minutes. Intervals are often performed in a series characterized by 3-6 reps using a relatively short recovery period, but will often include a longer recovery period at the series break. Accordingly, intervals place a substantial venous preload on the heart, and also impose a relatively high workload on the diaphragm.

Inward Rotation: Rotation of the midfoot or forefoot towards the medial side.

Lateral Side: The side of a limb furthest from the midline of the body.

Load Waves: A visual representation of training loads and their effects. The proper integration of succeeding supercompensation effects is undulatory in nature. Training loads are conducted with optimal frequency when placed at the crest of each succeeding supercompensation effect.

Macro-Cycle: A large training cycle comprising numerous micro and meso-cycles corresponding to an entire athletic season. The aim of a properly constructed macro-cycle is to enable optimal performance during the peak period.

Main Race Event: The racing distance selected for optimal performance during the peak period.

Medial Side: This side of a limb closest to the midline of the body.

Mega-Cycle: The largest of the training cycles, comprising two or more athletic seasons, or years of athletic development. Multiple-year developmental and peaking scenarios always entail mega-cycle planning.

Meso-Cycle: A medium training cycle corresponding to the monthly view of athletic training, comprising several micro-cycles of varying work capacity.

Micro-Cycle: A small training cycle comprising a series of load waves corresponding to the interfacing of day-to-day training and weekly view of athletic training.

MRE: See *Main Race Event*.

Multiple Peak Period: A complex peak period including at least two relatively widely separated plateaus of peak performance within a single athletic season. The multiple peak period normally begins with a short or extended peak period and is followed by a period of regenerative work that enables an athlete to re-ascend and compete upon a second plateau of peak performance within the same athletic season.

Muscular Hypertrophy: Enlargement of muscle tissue in response to training.

Neuromuscular Stereotype: A pattern or dominant habit of movement instilled by repetition, conditioning and motor learning.

ODE: See *Over-Distance Event*.

Outward Rotation: Rotation of the midfoot or forefoot towards the lateral side.

Over-Distance Event: The racing distance immediately over the athlete's selected main race event.

Passive Recovery: A day off from demanding running. Alternately, easy swimming and light stretching can be performed.

Peak: The highest athletic level attained during an athletic season. Achieving optimal physical and mental fitness for athletic performance. The time and place at which a personal best performance in the main race event is planned or takes place.

Performance Potential: An athlete's capability or potential athletic level at any given point in time, determined by innate talent, previous acquisition, and the training loads being assumed.

Plantar: The bottom side of the foot.

Plantar Fasciitis: Injury or inflammation of connective tissue located in the sole of the foot.

Plantarflexion: Downward movement of the foot or toes about a joint.

Plateau of Peak Performance: The relatively brief segment of the peak period lasting approximately 14-21 days in which optimal athletic performances are possible. The plateau of peak performance follows an ascent or taper having a duration of 7-14 days, and most commonly, 9-10 days. The planning and schedule for the athletic season should place the major championship competitions upon the plateau.

Preparatory Phase: A stage of athletic development characterized by acquisitive training efforts, including the base, hill, and sharpening periods.

Pressure-Induced Drag: The work done in overcoming the build-up of high pressure in front of an object due to its pushing open a hole in the air (or a fluid) and creating a wake of low pressure behind it. The formula for calculating pressure-induced aerodynamic drag is: $D = .5(\rho) (A_p) (C_d) V^2$, where D = the force of drag in Newtons, ρ = air density(Kg/m^3), A_p = the projected frontal area normal to the air stream (m^2), C_d = the coefficient of drag expressing the aerodynamic efficiency of the object, and V = the velocity of the object in meters per second.

Pronation: Inward rotation of the calcaneus (or heel) associated with articulation of the sub-talar joint. Also sometimes called eversion.

Proprioceptor: A sensory organ located in muscles, tendons, or other connective tissue which senses force or movement.

Q Angle: The downward and inward angle of the femur and upper leg measured from the hip towards the knee.

Quadrennial: A four-year developmental and peaking scenario, such as between succeeding Olympic Games.

Regeneration: Rebuilding or restoring a previously attained performance potential and athletic level.

Regenerative: Training loads intended for effecting regeneration.

Repetitions / Repetition Workout: A series of two or more high quality running efforts conducted equal to or less than goal pace in the main race event utilizing a recovery period equal to or greater than 2:30 minutes. In contrast to interval workouts, the venous preload on the heart and workload on the diaphragm is much reduced during recovery periods. Repetition workouts are normally conducted late in the sharpening period and sometimes place heavy demands on the anaerobic ATP-PC and ATP-Lactic acid metabolisms.

Running Economy: The amount of oxygen consumed relative to an athlete's body weight and speed commonly expressed in milliliters (ml) per kilogram (kg) per minute (min). The protocol for testing running economy commonly includes treadmill running at several predetermined speeds while recording oxygen consumption. An often-used reference point is 268 meters/minute, corresponding to 6:00 minute mile pace. An athlete's oxygen consumption at various running speeds can then be expressed as a percentage of his or her VO_2 maximum, and the individual's relative economy can be subject to comparison.

Sharpening: High quality work conducted approximately equal to or faster than goal pace in the main race event, and in such a manner as to cause an athlete to progress rapidly towards attaining peak fitness.

Short Peak Period: A simple peak period consisting of a 7-14 day and most commonly, a 9-10 day worthwhile break and ascent to a plateau of peak performance lasting 2-3 weeks.

Speed Endurance: A term sometimes used to refer to the conduct of intervals or repetitions, normally at speeds equal to or less than goal pace, to train the ATP-Lactic acid anaerobic energy metabolism.

Stabilization: Training loads undertaken during a worthwhile break, extended peak period, or multiple peak period, with the intention of maintaining an athlete's performance potential.

Stabilizing: Training loads intended for stabilization.

Steady State (SS): An evenly paced 3/4-effort run performed near an athlete's anaerobic threshold, normally conducted during the base and hill periods. With mature distance runners, a common benchmark used to evaluate their performance potential is the steady state pace they can maintain for one hour, or ten miles.

Supercompensation: A temporary enhancement of an athlete's performance potential resulting from the conduct of a training load that has stimulated an overcompensation adaptation. The correct time to assume another training load is at the peak of a supercompensation response.

Supination: Outward rotation of the calcaneus (or heel) associated with articulation of the sub-talar joint. Also sometimes called inversion.

Taper: See *Ascent*.

Training Load: A physical or mental stimulus intended to cause a progression effect and elevate potential and actual performance levels. Physical training loads comprise some combination of quantity (volume and duration), and quality (intensity, frequency, and density).

Transition: See *Decline*.

Transitional Phase: A phase of athletic development characterized by dramatic reduction or elimination of training loads. A period of decline consisting of post-season recovery.

Tri-Annual: The conduct of three athletic seasons in a calendar year. Generally, this practice is not as conducive to long-term athletic development as a bi-annual configuration.

Triennial: A three-year developmental and peaking scenario.

Two Day Rule: A rule based upon common observation and experience suggesting that the degree of injury in a muscle, tendon or other connective tissue may not be fully apparent until the second day after the initial occurrence. It is generally accurate.

UDE: See *Under-Distance Event*.

Under-Distance Event: The racing distance immediately under the athlete's selected main race event.

Valgus: Orientated, angled, bent, or twisted outward.

Varus: Orientated, angled, bent, or twisted inward.

Vector: A means of showing mathematically and/or visually both direction and magnitude, in this case, athletic development over time.

VO₂ Maximum: A scientific measurement of an athlete's aerobic ability or maximum oxygen uptake, commonly expressed in units of ml/kg/min.

Worthwhile Break: An easing of training effort to less than 60% of maximum working capacity following a period of more demanding acquisitive work. It is inadvisable to continue acquisitive efforts without periodically including worthwhile breaks in which the training loads are reduced to avoid the onset of residual and chronic fatigue. A time trial or competition is normally placed at the end of a worthwhile break, when, due to recovery, an athlete's performance potential and actual performance capability are substantially the same.

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AFTERWORD



Athletics at the highest level is both a science and an art. The road to mastery is not a simple or easy one. Paradoxically, athletes must first master theory, method and technique so that they can ultimately be liberated from it. Musicians study and practice for many years so that, when inspired, they can put it all aside and play jazz. But in mastering any art, there is also need for emotional and experiential maturation from within—or what the blues musicians refer to as mileage. The challenge is no different for the aspiring coach or athlete. I wish you success and enlightenment along the way.

—Robert M. Lyden
Portland, Oregon 2003

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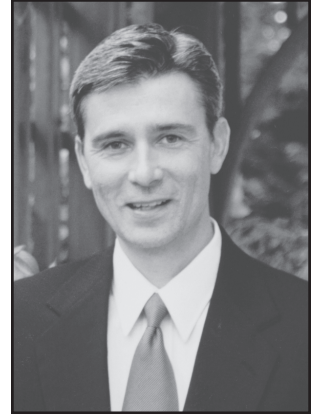
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ABOUT THE AUTHOR

Robert M. Lyden earned two M.A. degrees from the University of Minnesota, one in Modern European History, and another in Public Administration at the Hubert H. Humphrey Institute. He still writes on the subject of U.S. foreign policy. Lyden also received K-12 Teaching and Coaching Certification through St. Thomas College, St. Paul, Minnesota.



He has advised elite athletes, including Steve Plasencia (1988 and 1992 U.S. Olympic Teams), and Karl Keska (2000 British Olympic Team). Lyden served as an assistant collegiate coach, and was also associated with several high school state champions and title teams in the state of Minnesota. He has consulted to owners and trainers of Arabian and Thoroughbred racehorses, and written a training plan entitled "On Winning the Triple Crown."

Lyden was employed and later served as a consultant to Nike, Inc. An inventor and entrepreneur associated with over two-dozen patents, he creates innovative products for the sporting goods industry. He has also written several screenplays, including one based on the story of 1960 Olympic Champion Herb Elliott and his late coach Percy Cerutti. Lyden continues to write and lecture on both distance running and sports psychology.